CHAPTER 6

6.0 ALTERNATIVES

6.1. Introduction

As described in Chapter 2, TVA developed five resource planning strategies and a set of portfolios, corresponding to the seven scenarios, associated with each strategy. These strategies are the basis for the alternatives in this EIS. This chapter describes the portfolios (resource plans) associated with each strategy, the results of the strategy screening process, and the strategies retained as alternatives for further consideration. This chapter also summarizes the environmental impacts of the alternatives.

6.2. Strategies and Associated Resource Plans

Following is a summary of the resource portfolio developed for each of the strategies. The capacity additions for the resource portfolios are listed in IRP Appendices F and G. In the resource portfolio descriptions below, capacity additions and reductions are quantified in MW and energy additions and reductions are quantified in GWh.

All of the resource portfolios include the John Sevier Combined Cycle Plant, scheduled for completion in 2012, and Watts Bar Nuclear Plant, scheduled for completion in 2013.

6.2.1. Strategy B – Baseline Plan Resource Portfolio

The Baseline Plan Resource Portfolio is essentially a continuation of TVA's current power planning approach with the defined inputs of EEDR reductions of 2,100 MW and 5,900 GWh by 2020, renewables additions of 1,300 MW and 4,600 GWh by 2020, coal plant reductions of 2,000 MW by 2017, and no energy storage additions. The primary sources of new generation are nuclear and gas-fired capacity. Transmission upgrades are necessary to support new gas, nuclear, and coal-fired capacity and to maintain system reliability. Following is a summary of the portfolio attributes.

- Energy Efficiency / Demand Response—316 MW of capacity providing 550 GWh of energy reductions in 2010, growing to 2,900 MW providing 7,290 GWh in 2029
- Renewable Resources—1,330 MW of wind PPAs by 2015 providing 4570 GWh annually; PPAs continue through 2029
- Energy Storage—No additions
- Purchased Power—Purchased power decreases as existing PPAs expire; new PPAs limited to 900 MW
- Coal—Layup of 2,600 MW of current fossil fleet by 2017; coal units added in only one scenario, consisting of two IGCC coal units with CCS technology in 2025 and 2029.
- Nuclear—Bellefonte Units 1&2 added in five scenarios; Bellefonte Units 3&4 added in two scenarios for total of four nuclear units in two scenarios
- Gas-Fired Supply (self-build)—Gas capacity added in most scenarios to meet remaining supply needs, ranging from 11,600 MW by 2029 for highest load scenario to no additional capacity in the lowest load scenario.

6.2.2. Strategy A - Limited Change in Current Resource Portfolio

Under the Limited Change in Current Resource Portfolio, TVA would continue to operate its existing generating facilities as long as possible, continue with the committed EEDR programs and additions of renewable capacity, and rely on power purchases to meet the remainder of its capacity needs. Defined model inputs include annual EEDR reductions of 1,940 MW and 4,725 GWh by 2020, renewables additions of 1,300 MW and 4,600 GWh by 2020, and no coal plant reductions or energy storage additions. The primary source of the purchased power under most scenarios is natural gas. This strategy would require transmission line upgrades to connect to the sources of the purchased power to the TVA grid. Following is a summary of the portfolio attributes.

- Energy Efficiency / Demand Response—316 MW of capacity providing 550 GWh of energy reductions in 2010, growing to 2,200 MW providing 5,600 GWh in 2029
- Renewable Resources—1,330 MW of wind PPAs by 2015 providing 4,570 GWh annually; PPAs continue through 2029
- Energy Storage—No additions
- Purchased Power—Purchased power increases through new market purchases as contracts expire and to close future capacity and demand gaps
- Coal—No layups and no new additions
- Nuclear—No new additions after Watts Bar Unit 2
- Gas-Fired Supply (self-build)—No new additions beyond those currently approved.

6.2.3. Strategy C - Diversity Focused Resource Portfolio

The Diversity Focused Resource Portfolio includes an increase in EEDR programs and renewable energy additions over Strategy B. Defined model inputs include annual EEDR reductions of 3,600 MW and 11,400 GWh by 2020, renewables additions of 2,500 MW and 9,600 GWh by 2020, 3,000 MW of coal plant layups by 2017, and a pumped storage unit. Nuclear, coal, and gas-fired plants are options to meet demand. The Strategy C portfolio contains coal plant layups of almost 3,400 MW under all scenarios and new nuclear units under all but the two scenarios with the lowest load growth. The primary source of new generation to meet future electricity needs is nuclear and gas-fired capacity. Transmission upgrades would be necessary to support new renewable, gas, nuclear and coal-fired capacity, and TVA could also participate in interregional project to transmit renewable energy. Following is a summary of the portfolio attributes.

- Energy Efficiency / Demand Response—377 MW of capacity providing 705 GWh of energy reductions in 2010, growing to 5,300 MW providing 7,300 GWh in 2029
- Renewable Resources—1,760 MW of capacity providing 6,700 GWh by 2015 and increasing to 2,340 MW providing 8,600 GWh by 2029
- Energy Storage—850 MW of new pumped hydro storage
- Purchased Power—Purchased power decreases as existing PPAs expire; new PPAs for up to 900 MW in three scenarios
- Coal—Layup of 3,370 MW of current fossil fleet by 2017; additions of two IGCC plants with CCS under one scenario
- Nuclear—Bellefonte Units 1&2 added in five scenarios; Bellefonte Units 3&4 added in one scenario for total of four nuclear units in this scenario

- Gas-Fired Supply (self-build)—Gas capacity added in most scenarios, ranging from 8,200 MW by 2029 for highest load scenario to no additional capacity in the lowest load scenario.

6.2.4. Strategy D - Nuclear Focused Resource Portfolio

The Nuclear Focused Resource Portfolio includes an increase in EEDR programs and the same renewable energy additions as Strategy C. Defined model inputs include annual EEDR reductions of 4,000 MW and 8,900 GWh by 2020, the largest (7,000 MW) amount of coal plant layups by 2017, and a pumped storage unit. In the resulting portfolio, new generation is predominantly by renewables, nuclear and gas-fired plants. Transmission upgrades would be necessary to support new renewables, gas, nuclear and coal-fired capacity, and TVA could also participate in interregional project to transmit renewable energy. Following is a summary of the portfolio attributes.

- Energy Efficiency / Demand Response—1,529 MW of capacity providing 1,490 GWh of energy reductions in 2010, growing to 7,320 MW providing 16,500 GWh in 2029
- Renewable Resources—1,760 MW of capacity providing 6,700 GWh by 2015 and increasing to 2,340 MW providing 8,600 GWh by 2029
- Energy Storage—850 MW of new pumped hydro storage
- Purchased Power—Purchased power decreases as existing PPAs expire; new PPAs for up to 900 MW in four scenarios
- Coal—Layup of 6,864 MW of fossil fleet by 2017; additions of a IGCC plant with CCS in 2025 and one Supercritical PC plant with CCS in 2029 under one scenario
- Nuclear—Bellefonte Units 1&2 added in five scenarios; Bellefonte Units 3&4 added in two scenario for total of four nuclear units in these two scenarios
- Gas-Fired Supply (self-build)—Gas capacity added in most scenarios, ranging from 8,100 MW by 2029 for highest load scenario to no additional capacity in the lowest load scenario.

6.2.5. Strategy E - EEDR and Renewables Focused Resource Portfolio

The EEDR and Renewables Focused Resource Portfolio includes the largest amounts of both EEDR programs and renewable energy. The amount of coal plant layups is less than Strategy D but more than A, B, and C. Defined model inputs include annual EEDR reductions of 5,900 MW and 14,400 GWh by 2020, 3,500 MW and 12,000 GWh of renewable resources by 2020, 5,000 MW of coal plant layups by 2017, and no new energy storage. In the resulting portfolio, new generation is predominantly by renewables, nuclear and gas-fired plants. A high level of transmission upgrades would be necessary to support new renewable, gas, nuclear and coal-fired capacity, and TVA could also participate in interregional project to transmit renewable energy. Following is a summary of the portfolio attributes.

- Energy Efficiency / Demand Response—318 MW of capacity providing 798 GWh of energy reductions in 2010, growing to 6,950 MW providing 16,300 GWh in 2029
- Renewable Resources—2,250 MW of renewable resources capacity providing 8,300 GWh by 2015; 3,590 MW providing 12,580 GWh by 2029
- Energy Storage—no additions
- Purchased Power—Purchases beyond current contracts and contract extensions limited to 900 MW; small additions under three scenarios
- Coal—Layup of 4,443 MW of fossil fleet by 2017; no additions

- Nuclear—Three scenarios with Bellefonte Units 1&2 starting in 2022 and one scenario with Bellefonte Units 1, 2 and3 starting in 2022; no nuclear additions under three scenarios
- Gas-Fired Supply (self-build)—Gas capacity added in six scenarios, ranging up to 10,800 MW in highest load scenario to no additional capacity in the lowest load scenario.

6.3. Strategy and Portfolio Evaluation

The metrics used to evaluate the cost and financial risk attributes, economic development attributes, and a set of environmental attributes are described in Section 2.6 and IRP Chapter 5. Following are the raw values for these metrics for each of the 35 portfolios (7 portfolios to describe each of the 5 planning strategies) (Tables 6-1 and 6-2).

Table 6-1. Cost and financial metrics for the 35 resource portfolios and averages for each planning strategy.

		Scenario							
	Strategy	1	2	3	4	5	6	7	Average
PVRR (2010 billion $)	A	180	137	116	139	135	109	134	136
	B	173	134	114	136	133	107	133	133
	C	170	133	115	136	133	106	131	132
	D	180	141	121	145	141	110	139	140
	E	173	135	118	139	135	108	134	134
Short-term Rates ($/MWh, level 2011-2018)	A	76.82	75.92	78.42	74.47	75.75	77.31	74.97	76.24
	B	78.67	76.22	76.22	75.88	77.04	74.91	75.72	76.38
	C	79.95	76.73	78.93	77.25	76.99	77.11	77.35	77.76
	D	84.51	88.31	82.78	82.19	83.50	80.44	81.80	82.66
	E	80.41	79.29	82.05	77.91	79.40	79.82	78.52	79.64
Risk/Benefit Ratio	A	1.45	1.36	0.91	1.27	1.26	0.99	1.25	1.21
	B	1.41	1.24	0.97	1.16	1.18	1.00	1.18	1.16
	C	1.38	1.28	0.89	1.13	1.16	0.91	1.14	1.13
	D	1.40	1.22	1.00	1.21	1.17	0.96	1.18	1.16
	E	1.40	1.23	0.91	1.17	1.16	0.89	1.14	1.13
Risk Ratio	A	0.25	0.22	0.09	0.19	0.18	0.13	0.17	0.18
	B	0.24	0.20	0.10	0.16	0.16	0.14	0.16	0.16
	C	0.23	0.20	0.08	0.15	0.16	0.12	0.15	0.16
	D	0.23	0.19	0.10	0.17	0.16	0.11	0.15	0.16
	E	0.24	0.19	0.08	0.17	0.16	0.11	0.15	0.16

Table 6-2. Environmental and economic development metrics for the 35 resource portfolios and averages for each planning strategy.

		Scenario							
	Strategy	1	2	3	4	5	6	7	Average
Air Impact (Total 2010-2028 CO_2 emissions in million tons)	A	2,054	1,719	1,402	1,775	1,723	1,190	1,767	1,661
	B	1,774	1,461	1,317	1,518	1,480	1,138	1,533	1,460
	C	1,673	1,418	1,210	1,408	1,422	1,035	1,427	1,370
	D	1,468	1,170	1,058	1,256	1,204	962	1,249	1,195
	E	1,613	1,299	1,106	1,410	1,303	959	1,352	1,292
Water Impact (ordinal ranking of scenarios based on need for cooling of steam generating plants)									Final Strategy Rank
	A	3	4	5	4	4	5	4	4
	B	5	5	4	5	5	4	5	5
	C	4	3	3	3	3	3	3	3
	D	2	2	1	2	1	1	1	1
	E	1	1	2	1	2	2	2	2
Waste (ordinal ranking of scenarios based on total handling costs)									Final Strategy Rank
	A	33	4	5	3	4	4	3	4
	B	5	5	4	5	5	5	5	5
	C	4	3	3	4	3	3	4	3
	D	1	1	1	1	1	1	1	1
	E	2	2	2	2	2	2	2	2
Total Employment (percent change from Strategy B, Scenario 7)	A	+0.1					-0.4		
	B	+1.0					-0.3		
	C	+0.9					+0.2		
	D	+1.2					-0.1		
	E	+0.8					+0.3		
Growth in Personal Income (percent change from Strategy B, Scenario 7)	A	+0.1					-0.4		
	B	+0.8					-0.3		
	C	+0.6					+0.1		
	D	+1.0					-0.2		
	E	+0.6					+0.2		

The raw values for these metrics were then converted into ranking scores as described in IRP Section 5.6 for ease in their interpretation. IRP Section 7.2 displays the scorecards containing the ranking scores for each strategy. The cost and risk ranking metrics were combined into a single ranking metric score (see EIS Section 2.6) for each of the seven portfolios associated with each planning strategy. The seven ranking metric scores for each planning strategy were

then summed and used to rank the strategies (Table 6-3). The maximum possible score for a strategy is 700.

Table 6-3. Planning strategies ranked by their total ranking metric scores for cost and financial risk factors.

Rank	Planning Strategy	Ranking Metric Score
1	C - Diversity Focused Resource Portfolio	693
2	E - EEDR and Renewables Focused Resource Portfolio	690
3	B - Baseline Plan Resource Portfolio	675
4	D - Nuclear Focused Resource Portfolio	668
5	A - Limited Change in Current Resource Portfolio	657

The two highest ranked strategies (C and E) have very similar scores for the cost and risk ranking factors. Strategy B ranks in the middle of the range, separated by 15 points from Strategy E. Strategies D and A rank lowest. The 3-point difference between the highest ranked strategies C and E is not statistically significant. Strategy C has the highest scores for PVRR and both risk metrics of all portfolios, and strategies A and B are essentially tied for the highest score for short-term rate impacts.

Planning strategies D and E have the best (i.e., lowest) scores for the environmental metrics and A and B have the worst scores. Planning strategy C is in the middle of the range. Strategy A performs poorly due to the continued operation of all of the coal plants and the likely reliance on natural gas for most future capacity additions through PPAs. The other four strategies all have coal plant layups and, under most scenarios, nuclear capacity additions; these factors result in their lower CO_2 emissions.

The ranking of the strategies by the two economic development metrics was similar. Strategies B and D performed similarly and had greatest increases in total employment and personal income under the high-growth scenario. Strategies C and E also performed similarly. Strategy A was consistently the lowest ranked.

6.4. Strategies and Alternatives

Based on the evaluations described in the preceding section, TVA has eliminated strategies A and D from further consideration. The retained Strategy B (Baseline Plan Resource Portfolio) is a continuation of TVA's current planning strategy and this represents the No Action Alternative. The two retained alternative strategies representing the Action Alternatives are Strategy C - Diversity Focused Resource Portfolio and Strategy E - EEDR and Renewables Focused Resource Portfolio.

In order to better evaluate the retained strategies B, C, and E, the individual scenario-specific portfolios that comprise each strategy were examined more closely. Within each of the three strategies, the portfolios and resulting capacity expansion plans tended to be similar for the paired scenarios 1 (Economy Recovers Dramatically) and 4 (Game-Changing Technology), for scenarios 2 (Environmental Focus is a National Priority) and 5 (Energy Independence), and for

scenarios 3 (Prolonged Economic Malaise) and 6 (Carbon Legislation Creates Economic Downturn). The Scenario 7 (IRP Baseline Case) portfolios tended to be relatively unique. Based on the results of this examination, the portfolios associated with scenarios 1, 2, 3, and 7 have been retained for further consideration. The following Tables 6-4, 6-5, and 6-6 list the defined amounts of EEDR, new renewable generation, and coal plant layups and the generating capacity additions for each alternative strategy. The alternative strategies would also require varying amounts of new transmission system construction and upgrades to existing transmission facilities.

6.5. Preferred Alternative

At this time, TVA does not have a preferred alternative strategy. A preferred alternative strategy will be identified in the final IRP and EIS after TVA has considered the public comments on the draft IRP and EIS, and conducted further analyses of the alternative strategies.

Table 6-4. The No Action Alternative - Strategy B - Baseline Plan Resource Portfolio

Year	Defined Model Inputs			Capacity Additions by Scenario			
	EEDR[1]	Renew-ables[2]	Coal Layups[3]	SC1	SC2	SC3	SC7
2010	229	35	-	PPAs & Acquisitions			
2011	385	48	(226)				
2012	384	137	(226)	CC - 880 MW	CC - 880 MW	CC - 880 MW	CC - 880 MW
2013	610	155	(935)	WBN2 - 1180 MW	WBN2 - 1180 MW	WBN2 - 1180 MW	WBN2 - 1180 MW
2014	1,363	155	(935)	CT - 621 MW CT - 828 MW GL CT - 170 MW			
2015	1,496	160	(2,415)	CT - 828 MW CC - 910 MW	GL CT - 170 MW[4]		CT - 621 MW GL CT - 170 MW
2016	1,622	160	(2,415)	CT - 828 MW			CT - 621 MW
2017	1,751	160	(2,415)	CT - 828 MW			CT - 828 MW
2018	1,881	160	(2,415)	BLN1 - 1,250 MW			BLN1 - 1,250 MW
2019	2,012	160	(2,415)	CT - 828 MW	BLN1 - 1,250 MW		
2020	2,124	160	(2,415)	BLN2 - 1,250 MW			BLN2 - 1,250 MW
2021	2,216	160	(2,415)	CC - 910 MW	BLN2 - 1,250 MW		
2022	2,294	160	(2,415)	CT - 828 MW CC - 910 MW			CC - 910 MW
2023	2,362	160	(2,415)	CT - 828 MW			CT - 828 MW
2024	2,429	160	(2,415)	BLN3 - 1,117 MW			
2025	2,470	160	(2,415)	IGCC - 490 MW	BLN3 - 1,117 MW		CT - 828 MW
2026	2,495	160	(2,415)	BLN4 - 1,117 MW			
2027	2,509	160	(2,415)	CT - 828 MW	BLN4 - 1,117 MW		CT - 828 MW
2028	2,516	160	(2,415)	CC - 910 MW		CT - 828 MW	
2029	2,520	160	(2,415)	IGCC - 490 MW, CT - 621 MW	CT - 621 MW		CC - 910 MW

[1]Peak load impact (MW)
[2]Firm capacity at the summer peak (MW)
[3]Cumulative value of fossil layups (MW)
[4]Upgrade of Gleason CT plant from 360 to 530 MW

Table 6-5. Action Alternative - Strategy C - Diversity Focused Resource Portfolio

Year	Defined Model Inputs			Capacity Additions by Scenario			
	EEDR[1]	Renew-ables[2]	Fossil Layups[3]	SC1	SC2	SC3	SC7
2010	298	35	-	PPAs & Acquisitions			
2011	389	48	(226)				
2012	770	146	(226)	CC - 880 MW	CC - 880 MW	CC - 880 MW	CC - 880 MW
2013	1,334	286	(935)	WBN2 - 1180 MW	WBN2 - 1180 MW	WBN2 - 1180 MW	WBN2 - 1180 MW
2014	1,596	442	(935)	CT - 621 MW			
2015	2,069	515	(3,252)	CT - 828 MW GL CT 170 MW[4]- CC - 910 MW			CT - 621 MW GL CT - 170 MW
2016	2,537	528	(3,252)	CT - 828 MW			
2017	2,828	715	(3,252)				
2018	3,116	768	(3,252)	BLN 1 - 1,250 MW			BLN1 - 1,250 MW
2019	3,395	822	(3,252)				
2020	3,627	883	(3,252)	BLN2 - 1,250 MW, PSH - 850 MW	PSH - 850 MW	PSH - 850 MW	BLN2 - 1,250 MW, PSH - 850 MW
2021	3,817	896	(3,252)	CT - 828 MW			
2022	3,985	911	(3,252)	CC - 910 MW	BLN1 - 1,250 MW		
2023	4,143	922	(3,252)	CC - 910 MW			
2024	4,295	935	(3,252)	BLN3 - 1,117 MW	BLN2 - 1,250 MW		
2025	4,412	942	(3,252)	IGCC - 490 MW			CT - 828 MW
2026	4,502	947	(3,252)	BLN4 - 1,117 MW			
2027	4,561	948	(3,252)	CT - 828 MW			CC - 910 MW
2028	4,602	953	(3,252)	CT - 828 MW			
2029	4,638	954	(3,252)	IGCC - 490 MW, CT - 621 MW	BLN3 - 1,117 MW		CT - 621 MW

[1]Peak load impact (MW)
[2]Firm capacity at the summer peak (MW)
[3]Cumulative value of fossil layups (MW)
[4]Upgrade of Gleason CT plant from 360 to 530 MW

Table 6-6. Action Alternative - Strategy E - EEDR and Renewables Focused Resource Portfolio

Year	Defined Model Inputs			Capacity Additions by Scenario			
	EEDR[1]	Renew-ables[2]	Fossil Layups[3]	SC1	SC2	SC3	SC7
2010	34	35	-	PPAs & Acquisitions			
2011	181	48	(226)				
2012	1,136	178	(226)	CC - 880 MW	CC - 880 MW	CC - 880 MW	CC - 880 MW
2013	1,664	314	(935)	WBN2 - 1180 MW	WBN2 - 1180 MW	WBN2 - 1180 MW	WBN2 - 1180 MW
2014	2,431	493	(935)				
2015	3,479	580	(4,730)	GL CT - 170 MW[4], CT - 621 MW, CC (2) - 910 MW			CT - 621 MW GL CT - 170 MW,
2016	3,843	616	(4,730)	CT - 828 MW			
2017	4,183	846	(4,730)				
2018	4,504	921	(4,730)	CT - 828 MW			CC - 910 MW
2019	4,811	994	(4,730)	CC - 910 MW			
2020	5,074	1,060	(4,730)	CC - 910 MW			
2021	5,353	1,074	(4,730)	CT - 621 MW			
2022	5,460	1,094	(4,730)	BLN1 - 1,250 MW	BLN1 - 1,250 MW		BLN1 - 1,250 MW
2023	5,599	1,107	(4,730)	CT - 828 MW			
2024	5,739	1,124	(4,730)	BLN2 - 1,250 MW	BLN2 - 1,250 MW		BLN2 - 1,250 MW
2025	5,815	1,133	(4,730)	CT - 828 MW			
2026	5,893	1,142	(4,730)	CT - 828 MW			CT - 828 MW
2027	5,961	1,145	(4,730)	CT - 828 MW			
2028	6,009	1,154	(4,730)	BLN3 - 1,117 MW			CT - 621 MW
2029	6,043	1,157	(4,730)	CT - 828 MW			CT - 621 MW

[1]Peak load impact (MW)
[2]Firm capacity at the summer peak (MW)
[3]Cumulative value of fossil layups (MW)
[4]Upgrade of Gleason CT plant from 360 to 530 MW

6.6. Comparison of Environmental Impacts of the Alternatives

All of the alternative strategies have several common features that affect their anticipated environmental impacts. All strategies result in decreases in coal-fired generation and increases in the reliance on renewable and EEDR resources. All strategies also add varying amounts of new nuclear and natural gas-fueled generation. Emissions of air pollutants and the intensity of greenhouse gas emissions decrease under all strategies.

The three alternative strategies result in significant long-term reductions in emissions of SO_2, NOx, and mercury. Strategy E has the greatest reduction and Strategy B has the least reduction, although the differences among the strategies are small. The total direct emissions of CO_2 during the planning period are greatest for Strategy E and least for Strategy B. For all alternative strategies, both annual direct CO_2 emissions and the CO_2 intensity decrease; as with total emissions, this decrease is greatest for Strategy E and least for Strategy B.

The volume of water used and water consumed by thermal generating facilities increase for the three alternative strategies. The increases in the volume of water used are mostly less than 5 percent and greatest for Strategy B and least for Strategy E. The percent increases in the volume of water consumed are much greater as new thermal facilities are anticipated to use closed-cycle cooling. Water consumption under strategies B and C is similar and greater than under Strategy E.

Coal consumption, and consequently its related fuel cycle impacts resulting from mining, processing, and transportation, decreases under all of the alternative strategies. These decreases, and the resulting decreases in fuel cycle impacts, are greatest for Strategy E and least for Strategy B. Nuclear fuel cycle impacts are similar for strategies B and C, and for both of these strategies, greater than those of Strategy E. Natural gas fuel cycle impacts are somewhat greater for Strategy E than for strategies B and C.

The production of coal ash decreases under all strategies, and the decrease is proportional to the amount of coal plant layups. Consequently, ash production impacts would be greatest under Strategy B and least under Strategy E. The production of scrubber waste, and the impacts associated with its disposal, increases the most under Strategy B and the least under Strategy E. The amount of radioactive waste produced increases under all alternative strategies in proportion to the nuclear generating capacity added. The amounts are somewhat greater for strategies B and C than for Strategy E.

Land requirements for implementing the alternative strategies, and thus the potential for affecting land resources, vary with the capacity and types of new generating facilities. Excluding renewable generation, the land area required for generating facility construction is somewhat greater for Strategy C than for strategies B and E. When renewable generation is included, the land requirements are greatest for Strategy E and least for Strategy B. Life-cycle land requirements, which include land required for fuel production and processing, as well as buffer areas around facilities, are greatest for Strategy E and least for Strategy B.